GOVERNMENT OF INDIA
NEW AND RENEWABLE ENERGY
LOK SABHA

STARRED QUESTION NO:104
ANSWERED ON:03.03.2016
Research and Development in Solar Energy
Kaushik Shri Ramesh Chander;Sigriwal Shri Janardan Singh

Will the Minister of NEW AND RENEWABLE ENERGY be pleased to state:

(a) Whether the cost of solar power generation is much higher than thermal power, hydel power etc. in the country:
(b) If so, the details thereof indicating the per unit production cost of energy generated from various sources of energy including solar energy:
(c) The expenditure incurred by the Government in the research and development activities in the solar energy sector during the last three years and the current year:
(d) The major achievements made by Indian scientists in the solar energy sector; and
(e) The steps taken/being taken by the Government to reduce the production cost of solar power?

Answer

(a) to (e): A Statement is laid on the Table of the House.
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STATEMENT
STATEMENT REFERRED TO IN REPLY TO PARTS (a),(b),(c),(d)&(e) OF THE LOK SABHA STARRRED QUESTION NO. 104 TO BE ANSWERED ON 03.03.2016
(a)& (b): No, Madam.

The cost of energy keeps changing from State to State depending on technology, location of power plants and availability of resources. Solar power is being procured through open tenders and e-bidding. Lowest tariff obtained till date is Rs. 4.34/kWh

As per CERC Annual Report 2014-15, the tariff for various categories of Central Generating Stations, under the regulated tariff regime, as on 31.3.2015, is as given below:

S.No. Type of Generating stations Minimum
Total Tariff
(Rs./kWh) Maximum
Total Tariff
(Rs./kWh)
1. Pit head coal based station 1.58 3.65
2. Non-Pithead coal based station 3.32 5.53
3. Lignite based generating Stations 2.83 3.81
4. Gas Station Using Natural Gas as Fuel (APM) 4.07 4.73
5. Gas Station Using NAPM Gas as Fuel 4.40 4.56
6. Gas Station Using LNG as Fuel 10.24 12.01
7. Lignite based generating Stations 2.83 3.81
8. Hydro Stations 0.78 7.72
9. Wind Energy 3.67 5.87
10. Solar PV (FY 2015-16) - 7.04
11. Solar Thermal (FY 2015-16) - 12.05
12. Biomass Gasifier Power Project(FY 2015-16) 6.59 7.52

(c) The expenditure incurred by the Government in the research and development activities in the solar energy sector during the last three years and the current year is given below:
By Ministry of New and Renewable Energy (MNRE):
S. No.
Year Revised Expenditure (RE)
(Rs. in crores) Actual Expenditure

(Rs. in crores)
1 2012-13 47.50 47.50
2 2013-14 54.80 54.80
3 2014-15 44.80 44.80
4 2015-16 33.90 33.25
(till 26th Feb 2016)
-2/â€¦.
-2-

By Department of Science and Technology (DST):-
Year Expenditure
(Rs. in crore)
2012-2013 23.92
2013-2014 40.73
2014-2015 39.51
2015-2016 (up to 16 Feb 2016) 38.06

(d): Indian Scientists have played key role in advancement of solar technology in India as well as in leading Laboratories abroad. Some importantachievements of the R&D projects of the MNRE are given below:
â€¢ Crystallinesilicon solar cell with 18% efficiency has been developed by National Centre for Photovoltaic Research and Education (NCPRE) at IIT Bombay.Solar inverters of various capacities have also been developed.
â€¢ IIT Kanpur has developed organic solar cell
â€¢ Amrita University, Keralahas fabricated Dye Sensitized Solar Cell (DSSC) modules and storage integrated solar panels made for hand held device.
â€¢ World Renewal Spiritual Trust, Mumbai has developed wrought iron thermal storage which is now integrating with 1 MW capacity solar thermal power plant with 16-hour thermal storage at Mount Abu.
â€¢ IGNOU Community College, Kolkatahas installed an innovative floating solar power plant of 10 KWp capacity.
The achievements under DST programme are given below:
â€¢ The virtual centre, Solar Energy Research Institute for India and the United States (SERIIUS) co-led by the Indian Institute of Science (IISc)-Bangalore and the National Renewable Energy Laboratory (NREL) has been established in January 2013, for the Sustainable PV, Multi-scale Concentrated Solar Power, and Solar Energy Research. About 160 scientists, technologists, and engineers from India and the U.S are working on different themes.
â€¢ Scientists at Bharat Heavy Electricals Limited (BHEL) - Amorphous Silicon Solar Cell Plant (ASSCP), Gurgaon, Haryana have developed high efficiency solar cells by optimizing various process steps using new front metal contact pastes adopting standard manufacturing steps without introducing any additional process steps through shallow emitter technology.
â€¢ Development, Integration, Installation and Operation of 200 kW Solar Biomass Power test bed at Shive village in Maharashtra has been completed. This demonstrates concentrated solar thermal-biomass for a distributed decentralized (grid & off grid) application for an Indian village.
-3/â€¦.
-3-
â€¢ Indian scientists from KGDS Renewable Energy Private Limited (KGDS) and National Institute of Ocean Technology (NIOT) have demonstrated the capability of Design, Fabrication, Testing and Installation of Solar Multi-Effect Distillation System for providing potable water in arid rural areas. This system was successfully commissioned in February 2013 in the Narippaiyur village of Ramanathapuram district, Tamil Nadu, a rain shadow area with acute shortage of water.
Besides these, Scientists have written several papers and made presentations in international seminars.

(e): The Government is taking the following major steps to reduce the production cost of solar power in the country:
i. Fiscal and financial incentives in the form of accelerated depreciation, concessional/ customs and excise duties, preferential tariffs and generation based incentives are being provided to improve viability of solar power generation units.

ii. 33 Solar Parks are sanctioned in various parts of the country to achieve cost reductions of solar power generation through economies of scale and combined power evacuation facility.

iii. Procurement of solar power by financially strong intermediaries like NTPC.

iv. Long term vision and stable policy framework so that investors can plan better for investment.

v. Transparent E-reverse auction for procurement of solar power, which has already resulted in a price point of Rs. 4.34 /Kwh, almost at grid parity with the conventional sources of electricity.

vi. No wheeling charges for Inter State Transmission of the solar power.

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